



U.S. Department of Energy
Office of Inspector General
Office of Audit Services

Audit Report

The Department's Management of Non-Nuclear High Explosives



Department of Energy

Washington, DC 20585

June 26, 2006

MEMORANDUM FOR THE SECRETARY

FROM:

Greg Friedman
Gregory H. Friedman
Inspector General

SUBJECT:

INFORMATION: Audit Report on "The Department's
Management of Non-Nuclear High Explosives"

BACKGROUND

Explosives handling and processing is an integral part of the activities of the Department of Energy, especially its research and development enterprise. These operations involve a wide variety of explosive devices and materials such as rocket motors, propellants, bulk explosives, shaped charges, artillery shells, ammunition, and detonators. Due to the inherently dangerous nature of high explosives, Department regulations require that strict control and accountability be maintained over all components. Likewise, officials are charged with periodically inspecting stored explosives to ensure that they remain stable and safe for use. Due to its mission, the National Nuclear Security Administration is the most significant user of the Department's explosives inventory.

While performing our 2005 *Audit of the Department's Pollution Prevention Program* (DOE/IG-0680), we noted problems with recycling certain high explosives because officials had not taken action to evaluate the safety and stability of the materials. Because of the potential safety hazards associated with this program and prior IG findings, we initiated this audit to determine whether the Department was adequately managing its non-nuclear high explosive materials.

RESULTS OF AUDIT

Our review disclosed that two of the three defense laboratories were not always maintaining control, accountability, and safety over a wide variety of explosives. In particular, we observed that:

- Sandia National Laboratories could not properly account for at least 410 items, including detonators, rocket motors, shaped explosives, and bulk explosive powders that had been consigned to off-site private sector organizations, including laboratory subcontractors;
- Both Sandia and the Los Alamos National Laboratory accumulated large quantities of anti-personnel rockets, gun rounds and cartridges, and aircraft rocket motors that were not likely to be needed for current or future missions;



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- Sandia's explosives inventory system could not be reconciled to inventories maintained by certain Federal facilities at which Sandia stored explosives, revealing potential shortages of about 43 similar items;
- About 190,000 pounds of explosive propellant contained in 39 rocket motors owned by Sandia were not recorded in the Laboratory's inventory system; and,
- Both Sandia and Los Alamos were not inspecting or reviewing the stability and safety characteristics of most of their high explosive materials.

The lack of control and accountability over high explosives occurred, in large part, because these Laboratories failed to design and implement effective local high explosive management strategies. While the Department had established guidelines for high explosives management, site specific policies and procedures did not fully embrace inventory control, did not ensure that explosive materials were kept to the minimum required for programmatic operations, and had not ensured the implementation of safety review requirements. In addition, we noted that cognizant Federal officials limited their reviews of high explosives to workplace hazards and administrative controls. Without improvements in this critical area, there is increased risk that worker safety may be compromised and that extremely dangerous and potentially destructive explosive materials may be subject to theft or diversion.

There was a sharp contrast between the findings at Sandia and Los Alamos and what we found at the Lawrence Livermore National Laboratory. We noted, for example, that Livermore had developed and implemented a robust program for high explosive inventory control, accountability, reduction, and for testing the safety and stability of the explosives. The Livermore effort demonstrated that high explosives can be managed and controlled without adversely impacting mission performance. We made several recommendations designed to aid the Department in improving its high explosives program at all of its sites.

Specific names of inventory items and locations at which they may have been stored have been omitted from this report because of security concerns. Details of our findings and the type and amount of explosive materials in question were provided to responsible Federal and contractor officials. Our findings were also coordinated with the U.S. Department of Justice's Bureau of Alcohol, Tobacco, Firearms, and Explosives.

MANAGEMENT COMMENTS

Management officials from NNSA indicated that they agreed with our conclusions and stated that certain immediate actions related to inventory controls, safety, and storage had been implemented. While NNSA concurred with the report, management commented that they did not believe that there was ever a risk of diversion of explosive material. Based on our extensive review of materials consigned to off-site storage facilities by the Sandia National Laboratory, for example, we disagree with management's assertion that there was no risk of diversion. Without a means of ensuring positive control and in light of significant inventory differences and poor record keeping, a theft or diversion could have occurred and not been detected.

NNSA's comments are provided in their entirety as Appendix 3. Several other organizations provided technical comments which we have incorporated into our report as appropriate.

Attachment

cc: Deputy Secretary
Administrator, National Nuclear Security Administration
Under Secretary for Energy
Under Secretary for Science
Chief of Staff
Assistant Secretary for Environment, Safety and Health
Director, Office of Security and Safety Performance Assurance

REPORT ON THE DEPARTMENT'S MANAGEMENT OF NON-NUCLEAR HIGH EXPLOSIVES

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MANAGEMENT OF HIGH EXPLOSIVES

Life-Cycle Asset Management of High Explosives

Two defense laboratories did not maintain adequate control, accountability, and safety over their high explosive inventories. At Sandia National Laboratories (Sandia), contractor officials did not always track the acquisition and use of explosives and could not account for significant quantities of explosive material and devices. In addition, both Sandia and the Los Alamos National Laboratory (Los Alamos) maintained large quantities of high explosives that were unlikely to be needed for current or future missions. Finally, both organizations were not regularly evaluating the stability and safety of the high explosive materials as required. In contrast, we found the high explosives management process at the Lawrence Livermore National Laboratory (Livermore) to be effective.

Materials Accountability

Sandia did not adequately track the acquisition, use, or disposal of its explosive material at off-site locations. Comparison of the inventories maintained by off-site locations to Sandia's records revealed significant disparities and resulted in the identification of items that could not be accounted for or whose disposition path was less than certain. Specifically, Sandia could not account for at least 410 items, including detonators, rocket motors, shaped explosives, and bulk explosive powders that had been consigned to private sector organizations. Sandia's *Explosive Inventory and Information System* (EIS) also could not be reconciled with inventories maintained by a number of Federal facilities at which Sandia explosives were located, resulting in about 43 unreconciled items.

In addition, we found that, in certain instances, quantities held by off-site locations either exceeded those recorded in the EIS or were not recorded at all. At five locations, we observed that 255 explosive items similar to those types described above and 500 rounds of ammunition were not reflected in the EIS. As an example, we identified a large quantity of Sandia-owned materials - almost 190,000 pounds of explosive propellant contained in 39 rocket motors - that were stored at a Federal facility; however, they were not listed in EIS.

Based on discussions with responsible Sandia officials and personnel at the off-site locations, as well as a review of records provided by both, we determined that:

- Quantities of on-hand explosives at 15 of the 20¹ off-site locations tested were not consistent with the information contained in the EIS;
- Reconciliation was not possible for 4 of the 20 because officials from the off-site locations were unable to provide sufficient data to permit us to make a determination of inventory levels; and,
- The inventory at only 1 of the 20 locations could be reconciled to the EIS without exception.

Officials from both Sandia and off-site locations told us that they could not fully explain how the differences occurred. In a number of instances, responsible individuals stated that they provided the explosives to organizations to be used in tests or experiments and simply assumed that differences in what was recorded in Sandia's EIS and site-level inventories were as a result of the material being expended. In most of the situations where items held at the off-site locations exceeded quantities recorded in EIS, Sandia officials told us that the materials were never entered into their system as required.

Mission Need

Sandia also retained explosive materials that significantly exceeded mission need. At the time of our site review, Sandia maintained about 2,300 High Velocity Aircraft Rocket (HVARs) motors. These rocket motors were obtained as surplus military ordnance to provide cost-free propulsion for sled track tests. Information provided by contractor officials revealed that in the last five years, 82 of the HVARs had been used for various tests and an additional 242 had been destroyed. At this rate of consumption, Sandia had enough HVARs for approximately 36 years of similar activities. In 2002, Sandia designed a plan to draw down this inventory by 200 rocket motors per year, either through experimental testing,

¹ These 20 locations included Department of Defense (DOD) controlled sites, private sector organizations – including universities – and other Department facilities that stored and utilized explosive materials in National Laboratory sponsored experiments or tests.

use or disposal. They did so because of the age of the rocket motors (manufactured in 1952), and the potentially low stabilizer levels that could affect the ability to safely store and use the materials and ultimately require the Laboratory to engage in a costly disposal campaign. However, it was not until May 2004 that Sandia had begun to make progress on the inventory draw down plan.

Los Alamos also accumulated significant amounts of high explosive materials that were unlikely to be used for current or future missions. For example, we identified 63 anti-personnel rockets that were acquired by the laboratory in 1986. While these devices no longer included warheads, each rocket still contained enough propellant to burn for a maximum range of 6,500 yards. Even though some of these items were considered for disposal in an on-going inventory reduction effort, the Los Alamos official designated as the "owner" of this material stated that he requested that the items be kept in inventory because they were "almost like gold." The owner decided to retain the items in spite of the fact that the last test that Los Alamos conducted with these rockets was at least 10 years ago and that there was no projected use for them. In another example, Los Alamos obtained 141 gun rounds and cartridges during the late 1980's that had no defined need. Los Alamos officials could not provide a date when these items had last been used nor did they believe that there was a foreseeable programmatic use for the gun rounds and cartridges. However, a Los Alamos official stated that he wanted to keep these items because they were difficult to obtain.

Stability and Safety

Although required by the *DOE Explosives Safety Manual* (Explosives Safety Manual), neither Sandia nor Los Alamos routinely examined the stability and safety characteristics of their high explosives. Under normal circumstances, site officials are required to conduct periodic reviews to examine the packaging, static sensitivity, and physical state of their high explosive materials. Testing revealed, however, that these required examinations were not being performed. For example, Los Alamos' inventory reduction effort found about 32,000 pounds of bulk powders and propellants and 359 munitions units such as rocket motors, warheads, and missiles – some

of which had been stored at the site for over 40 years – had not been examined to determine whether they remained stable and safe for use and/or continued storage.

Problems with stability and safety reviews of explosives also existed at Sandia. For example, as noted previously, Sandia maintained high explosives at a number of off-site facilities. An official at one off-site Federal facility told us that he was concerned with the age and hazard classification of rocket motors being stored by Sandia at his location. These materials had been stored at the site since 1966, but to the Federal official's knowledge, no one was performing storage reviews to determine whether the motors remained stable. According to Sandia requirements, these rocket motors should have been reviewed every ten years at a minimum, and as frequently as every year depending on their condition and type as determined at the time of acquisition.

Explosives Management Strategy

Despite Departmental requirements to effectively manage property from acquisition to disposition, neither Sandia nor Los Alamos fully embraced inventory control and accountability over explosives materials. Further, while the Department of Energy (Department) had established high explosives safety management guidelines, neither site was ensuring that the quantity of explosive materials was kept to the minimum required for programmatic need or that safety review requirements were implemented. Finally, Federal officials were not implementing effective explosive management programs.

Implementation of Control and Accountability Procedures

Although local procedures had been developed to control high explosives, their implementation was inadequate at both Sandia and Los Alamos. In particular, even though Department regulations required contractors to track explosives from acquisition to disposition, several individuals at these laboratories were unaware that they had been assigned responsibility to manage and control specific quantities of explosives. For example, ownership of 520 artillery shells brought to Sandia in 1992 was transferred to a new owner in 2004. The new owner told us, however, that he had not been made aware of the transfer, had no use for these materials, and did not want them. In addition, numerous explosive items had no individual owners

identified in the Los Alamos inventory system despite a site-level requirement. For example, we found that no owner had been assigned responsibility for managing 288 warheads and 96 rocket motors. A Los Alamos official acknowledged the problem with ownership assignments and stated that they were working towards identifying owners for all explosive materials to improve accountability.

While Sandia required cradle-to-grave management of explosive materials, materials' owners were not specifically required to perform needed accountability and verification procedures. In particular, owners were not required to conduct periodic inventory verification and/or validation tests necessary to properly maintain EIS information. Further, with respect to Sandia's materials stored at off-site locations, officials had not established an effective process to confirm how much material was being used during experiments or to periodically validate the off-site inventory amounts in the EIS.

Programmatic Need

Large quantities of aging high explosives had been obtained and were being stored because the National Nuclear Security Administration (NNSA) site management at Sandia and Los Alamos was not ensuring that the quantity of explosives at a laboratory was limited to the amount required for operations as prescribed by the Department's property management regulations. The owners of the high explosives stored at two of the three sites we visited were not required to justify the continued storage of materials based on programmatic need, even though these materials had not been used for many years. Sandia officials indicated that owners were reluctant to identify explosives as no longer needed, because the owner's program would have to cover the cost of disposing of the material. On the other hand, while the material is being stored at Sandia, the cost of maintenance and storage is charged to overhead and the burden is borne by all activities at the site. Los Alamos also had significant inventories of high explosives that were not being reviewed for programmatic need because either existing requirements were not being implemented or owners were not assigned for existing explosive materials. Los Alamos recently initiated a project to reduce the amount of high explosives

being stored. While this was a positive step, it was a one-time effort that was not designed to be a part of an on-going high explosive inventory management program.

Conversely, at the third site, Livermore, owners actively managed the explosive materials inventory. Specifically, officials had initiated a procedure to ensure that owners annually reviewed their inventories of high explosive materials and identified whether they were mission essential or excess. If declared excess, Livermore initiated its disposition process. In addition, the site developed and implemented a procedure to test explosive materials for stability and safety. Livermore's overall approach to managing high explosive materials could be used as an example for other locations.

Safety and Stability

Storage review programs to determine the safety and stability of explosive materials at Sandia and Los Alamos were not current or active. The Department's Explosives Safety Manual requires each site to designate or establish storage review committees which, in turn, design storage review programs for each explosive material. Effective storage review programs address issues related to the stability, safety and handling of the materials stored and used at the sites including, on a case-by-case basis, a determination of the required frequency of storage review when explosive items are initially acquired.

At Sandia, the last storage review initiative was performed in 2002 and did not include off-site locations. This effort resulted in the disposal of over 30,000 pounds of aging explosive powders and propellants. Sandia officials indicated that they did not have the resources or site support for other storage review program activities. Additionally, materials stored at off-site locations were not being reviewed for stability and safety. Sandia confirmed that they did not have requirements, policies, or procedures for managing explosives at off-site locations.

Similarly, Los Alamos has not had a site-wide explosive storage review program since 1998. Although Los Alamos officials reestablished a storage review program in July 2005, concurrent with our review, this program will not be effective without the participation of owners or complete

historical data for explosives. For example, local policy for one division required that designated owners determine, at the time of scheduled inventory, whether explosives should be reviewed for stability and safety or should be scheduled for disposal. However, in many cases in this division, explosives ownership was lost when personnel retired or programs were discontinued causing "orphaned" explosives to lose a critical control necessary for stability and safety reviews. We also learned that historical data prior to 1999 was not available for another division, a factor that prevented management and the audit team from determining whether needed reviews had been performed. Officials told us that Los Alamos had recently assigned a full-time person to implement a new inventory reduction program as well as manage and track one division's inventory of high explosives. Although a positive step, this effort will only cover one of the several Los Alamos divisions that use high explosives.

Federal Management

Contractor explosives programs were not effective at Sandia and Los Alamos because Federal management of these activities was limited to reviews of workplace hazards and administrative controls. Based on discussions with Federal officials, we determined that the Site Offices were not always aware of explosives that had been acquired or were maintained by the laboratories. For example, no Federal official was aware that Sandia's EIS did not reconcile with high explosive inventories at off-site locations. Also, while contractors had made sporadic evaluations to draw down their high explosive inventories to be more consistent with mission needs and storage capabilities, we could not identify a specific Federal official or organization that was verifying that those activities were performed.

To his credit, a Federal official had notified the Los Alamos Site Office at least five times during 2004 and 2005 that Los Alamos needed to reinstate an Explosives Storage Review Committee to ensure that explosives were still in a safe condition for continued storage. This finding was closed for Los Alamos in August of 2005 when an Explosives Storage Review Committee was established. However, we did not find that Federal officials expressed similar concerns at Sandia, despite the fact that the last

storage reviews were conducted in 2002. Sandia had not re-established a storage review program by the end of our review.

We also noted that the environment, safety and health (ES&H) reviews by the Office of Independent Oversight had not recently examined the specific element of explosives materials storage and had not identified the specific issues detailed in this report. Officials from Independent Oversight told us that their inspections include a review of site implementation of the core functions of integrated safety management and whether those processes are working as intended at the user level. The inspections are based on a sample of facilities and work activities that is selected based on site-specific factors such as risks, hazards, management initiatives, and past ES&H performance. Independent Oversight personnel had not selected explosives practices as a specific area of review on recent inspections of Los Alamos and Sandia.

Departmental Risk

Without improvements in the control and accountability for the management of high explosives, the Department faces an increased risk of theft, diversion, or unauthorized use of this material. The recent theft of a large quantity of privately-owned explosives from a non-Departmental storage depot in Bernalillo County, New Mexico, illustrates the need for improvements in the Department's controls. The storage depot site reportedly was inspected weekly, allowing the quantity and type of materials stolen from the depot to be readily identified. Had a theft occurred at one of the non-federal, off-site locations included in our review, it would have been extremely difficult, if not impossible, to accurately identify the type and extent of stolen Departmental materials.

Because of the inherent risks associated with high explosives management, it is incumbent on the Department to ensure that explosive safety is given high priority. While no explosives-related fatalities have occurred since the conception of the Department's Explosives Safety Manual in 1978, it was the death of three workers at the Pantex Plant in 1977 that brought about the development of the Explosives Safety Manual. During the course of the audit, we learned of several incidents and accidents at other facilities that occurred during the handling of explosives. For example, in 1999, two Department of Defense contractor employees were seriously injured when

a 105 millimeter howitzer shell exploded during disassembly. Another incident involved a worker who was killed while removing a motor that contained ferrocene – a constituent in propellant that is extremely impact and motion sensitive – from its packaging. Both 105 millimeter shells and ferrocene are present at Sandia.

The Department can mitigate the risks associated with explosives handling and processing by establishing a verifiable inventory management system and by maintaining a consistent and comprehensive effort to identify the characteristics of high explosives stored at its sites and addressing those that are unsafe or excess to their needs. Without an effective explosives management program, the Department increases the risk to worker health and safety and creates the potential for adverse impacts to the environment. Further, timely disposal of these excess materials provides the opportunity for savings of storage and disposal costs.

RECOMMENDATIONS

We recommend that the Administrator, National Nuclear Security Administration:

1. Develop and implement life-cycle asset and property management policies and procedures that, at a minimum, require contractors to periodically verify inventory amounts, ownership, and location – including off-site locations – of high explosives under their cognizance;
2. Ensure that contractors conduct periodic reviews of existing explosives inventories to establish programmatic need;
3. Ensure that contractors implement the provisions of the *DOE Explosives Safety Manual* by establishing storage review programs and committees to evaluate the stability and safety of all explosives under their cognizance; and,
4. Establish a Federal oversight mechanism, in coordination with the Office of Independent Oversight, for the management of high explosives that includes examining the accuracy and

programmatic need of reported explosives inventories, and the existence and effectiveness of site storage review programs.

MANAGEMENT REACTION

NNSA agreed with our report and indicated that it had implemented some immediate actions related to inventory controls, storage and safety. NNSA also stated that at no time was there a risk of diversion of explosive material.

The Office of Security and Safety Performance Assurance, the NNSA Sandia Site Office, and its site contractor, Sandia National Laboratories also provided technical comments and suggestions regarding our draft report. Management comments are summarized below. NNSA comments are included in their entirety as Appendix 3.

The Office of Security and Safety Performance Assurance agreed that the report identified significant deficiencies with explosives safety that need to be addressed and indicated that corrective actions for these deficiencies will help reduce the risk from explosive storage activities at Los Alamos and at Sandia.

The NNSA's Sandia Site Office agreed that the report raised issues that warranted immediate attention. It indicated that actions had been taken or were initiated to improve safety and accountability of high explosive materials. We were informed that, after we issued our draft report, the laboratory had, for the most part, completed a reconciliation of the explosive inventory problems we identified.

AUDITOR COMMENTS

NNSA's comments recognize that improvements are needed in the management of high explosives and are, therefore, considered responsive to the recommendations. However, we do not agree with management's assertion that there was no risk of diversion of explosive material. During the audit, Sandia indicated that it did not have policies and procedures to ensure accountability of off-site locations that received or stored explosive materials. Without a means of ensuring positive control, and in light of the significant inventory differences we identified, a theft or diversion of material could have occurred and not have been discovered.

With regard to Sandia's reported reconciliation efforts, we are concerned that they were limited and may not be accurate. For example, Sandia limited its reconciliation to items specifically identified at the 15 off-site locations where we found inconsistencies and has yet to complete similar procedures for inventories at all of its 134 off-site storage locations. In addition, an examination of evidence supporting the recent reconciliation revealed that, in many instances, it was based solely on testimonial evidence and contained accounting and quantity errors.

As a result of the various comments provided, we made modifications to the final report, where appropriate.

Appendix 1

OBJECTIVE

The objective of our audit was to determine whether the Department of Energy (Department) was adequately managing its high explosive (non-nuclear) materials.

SCOPE

The audit was performed between April 2005 and March 2006. We conducted work at Headquarters, Washington, D.C.; Sandia National Laboratories (Sandia), Albuquerque, NM; Los Alamos National Laboratory (Los Alamos), Los Alamos, NM; and Lawrence Livermore National Laboratory, in Livermore, CA.

METHODOLOGY

To accomplish the audit objective, we:

- Reviewed laws, regulations, contractual requirements, and policies and procedures relevant to the Department's use and storage of high explosive materials;
- Reviewed site specific guidance, manuals, and policies and procedures where available;
- Held discussions with Headquarters program officials and reviewed relevant documentation regarding high explosives at the National Nuclear Security Administration (NNSA) sites;
- Held discussions with officials from the NNSA Service Center and the Sandia and Livermore Site Offices and reviewed relevant documentation regarding the use and management of high explosives at the sites;
- Held discussions with officials from the Sandia, Los Alamos, and Lawrence Livermore National Laboratories and reviewed relevant documentation regarding their use and management of high explosives;
- Selected judgmental samples of explosive materials, located these materials at the sites, and held discussions with site officials to determine whether there was a current or likely future programmatic use for the materials listed in their name;

- Selected a judgmental sample of 20 off-site locations which reportedly maintained Sandia-owned explosive materials and determined whether the high explosives listed in the Explosive Inventory and Information System were equal to the amount in existence at the off-site location; and,
- Obtained and reviewed documentation relevant to accidents and theft of high explosives.

The audit was performed in accordance with generally accepted Government auditing standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Accordingly, we assessed the significant internal controls and performance measures established under the Government Performance and Results Act of 1993. While specific performance measures concerning the management of high explosives did not exist, performance in this regard was measured as an element under each Laboratory's environment, safety, and health performance. Because our review was limited, it would not necessarily disclose all internal control deficiencies that may have existed at the time of our audit. We only used computer processed data to select sample items and off-site storage location information; therefore, we did not test for data reliability.

We held an exit conference with management on June 20, 2006.

PRIOR REPORTS

- *The Department's Pollution Prevention Program* (DOE/IG-0680, March 2005). The audit found that the Department of Energy (DOE) did not have in place a comprehensive, consistent, complex-wide program to identify, evaluate, and implement cost-effective proposals to minimize the generation of waste. For example, sites did not systematically research new opportunities to prevent and recycle waste; and sites did not always implement pollution prevention strategies that they had already concluded were feasible and cost effective. In addition, we found that the DOE did not always support and fund pollution prevention programs, nor did it establish performance measures to monitor waste reduction activities. Based on our review of only four sites, we identified a total of \$5.5 million of potential cost savings opportunities that DOE had not realized. In addition, at one site, annual average cost savings from pollution prevention activities since Fiscal Year 2002 actually decreased nearly \$40 million. We noted that additional senior management focus is needed if DOE is to maximize opportunities to reduce costs and minimize waste generation across the complex.
- *Inspection of Oversight of Shock Sensitive Chemicals at the Department's Ames Laboratory* (DOE/IG-0615, August 2003). The inspectors concluded that, although Ames has documented requirements in place for controlling shock sensitive chemicals, implementation shortcomings resulted in shock sensitive chemicals not being properly controlled, raising concerns with respect to personnel safety and the protection of the DOE assets. Specifically, the inspection found that: 1) Ames had not implemented a life-cycle management system to ensure the proper identification, labeling, tracking, storage, handling, and disposition of shock sensitive chemicals; and 2) although Ames has a safety performance measure broad enough to encompass management controls over shock sensitive chemicals, associated assessment procedures for the performance measure do not specifically address shock sensitive chemicals. The inspection also found that DOE does not have a standard definition or listing of shock sensitive chemicals. Consequently, there is inconsistent handling among DOE sites of chemicals that may be shock sensitive.
- *Inspection of Explosives Safety at Selected Department of Energy Sites* (DOE/IG-0578, December 2002). The inspectors concluded improvements could be made in the areas of explosives safety, fire safety, and lightning safety. Specifically, degradation review programs regarding explosives shelf-life were not fully implemented at the Nevada Operations Office (NVO) and the Oak Ridge Operations Office; DOE had not incorporated the *DOE Explosives Safety Manual* into all applicable contracts; combustible material was inappropriately stored near explosives at NVO; and tests of lightning protection on NVO explosive storage magazines were not completed consistently.

Appendix 2 (continued)

- *Stocked Inventory at the Savannah River Site* (DOE/IG-0508, June 2001). The report disclosed that Westinghouse Savannah River Company was not adequately managing its stocked inventory. The contractor had not identified and disposed of items that: 1) exceeded maximum storage levels, and 2) had no usage during the past 10 years. The audit disclosed that Westinghouse did not have procedures in place to calculate the amount of stocked inventory necessary for the site's mission. Further complicating the situation, Westinghouse accounting procedures penalized users for identifying and disposing of excess stocked inventory. Specifically, when items were declared excess, removed from inventory, and disposed of, they had to be charged against a specific user's budget account. Thus, the user's had little or no incentive to ensure that excess inventories were properly addressed. The Inspector General found similar inventory situations at several Departmental facilities. In fact, the issue of property and inventory controls was identified as one of the top 10 management challenges facing DOE. The Office of Inspector General believed that a high-level Department-wide effort was warranted to identify and dispose of excess assets, reduce related storage and maintenance costs, and develop a system that maximizes operational efficiency by maintaining inventories at appropriate levels.
- *Utilization of the Big Explosives Experimental Facility* (WR-B-01-03, March 2001). The Big Explosives Experimental Facility (BEEF), under the direction of the Nevada Operations Office, was designed and operated to perform large-load, high-explosive experiments that could not be done at other DOE firing ranges. The audit found that since it opened in 1997, the BEEF was used to perform only a limited number of detonations (shots). In fact, most of the shots performed at the BEEF could have been conducted at other DOE firing facilities. The audit also determined that in the future, facility utilization might decline even further because potential users of the facility were moving away from the larger shots for which the BEEF was designed. If the BEEF was used on an as-needed basis, \$500,000 could be better used annually, and the laboratory personnel could avoid unnecessary travel costs to the NTS.
- *Management of Unneeded Materials and Chemicals* (CR-B-99-02, September 1999). A mission change resulting from the end of the Cold War called into question the need for contractors at the DOE's large production facilities and laboratories to acquire, directly produce, and/or store enormous amounts of non-nuclear materials such as sodium, lead, chemicals, and scrap metal. The audit found that DOE needed to strengthen its management of unneeded materials and chemicals. Large quantities of unneeded materials existed at many contractor sites, and Departmental actions to sell or reuse these items have been fragmented. This situation existed because DOE has not assigned organizational responsibility and instituted an overall program to sell, reuse, or characterize as waste its unneeded inventory. As a result, DOE may be missing disposition opportunities that could result in savings or reduced costs.




Department of Energy
National Nuclear Security Administration
Washington, DC 20585



MAY 18 2006

MEMORANDUM FOR Rickey R. Hass
Assistant Inspector General
for Financial, Technology, and Corporate Audits

FROM: Michael C. Kane 
Associate Administrator
for Management and Administration

SUBJECT: Comments to Draft Report on Management of Non-
Nuclear High Explosives; A05PT019/2005-07776

The National Nuclear Security Administration (NNSA) appreciates the opportunity to have reviewed the Inspector General's (IG) draft report, "The Department's Management of Non-Nuclear High Explosives." We understand that the IG conducted this audit because of audit work associated with the Pollution Prevention Program that indicated problems with recycling certain high explosives inventories because officials had not taken action to evaluate the safety and stability of the materials. Therefore because of the safety hazards, the audit was initiated to determine whether the Department was adequately managing its non-nuclear high explosive materials.

NNSA is in agreement with the draft report and has implemented some immediate actions related to inventory controls, storage, and safety. It is important to note that at no time was there risk of diversion of the explosive material. I have attached both the Site Office's and the Laboratory's specific comments for your consideration as technical clarifications.

Should you have any questions related to this response, please contact Richard Speidel, Director, Policy and Internal Controls Management.

Attachments

cc: Robert Braden, Senior Procurement Executive
Patty Wagner, Manager, Sandia Site Office
Karen Boardman, Director, Service Center
Frank Russo, Environmental, Safety and Health Advisor



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